

Brinton (J. H.) *W. F. & Brinton Compliments*

# THE MARCH OF SURGERY.

## AN ADDRESS

INTRODUCTORY TO THE

## FIFTY-EIGHTH COURSE OF LECTURES

IN THE

JEFFERSON MEDICAL COLLEGE OF PHILADELPHIA.

Delivered October 2d, 1882,

BY

JOHN H. BRINTON, M.D.,

PROFESSOR OF THE PRACTICE OF SURGERY AND CLINICAL SURGERY.



PHILADELPHIA:  
PRESS OF WM. F. FELL & CO., 1220-24 SANSOM STREET.

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BY JOHN H. BRINTON, M.D.,

*Professor of the Practice of Surgery and Clinical Surgery.*

GENTLEMEN—To utter words of kindly greeting is always a grateful task, and here, to-night, the spokesman of the Faculty of this institution, it becomes my pleasant duty to welcome you, in their name, to the scene of your winter's work. There are some of you to whom this is an occasion of far more than ordinary interest, for you now take the first forward step on that path you must tread for life. Others of you there are, old travelers, who have already journeyed many days, and who now are hastening on to reach that first halt in the student's pilgrimage—the doctorate. To all of you, old friends and new, the beginning of each session brings fresh cares; but how can I speak of that grave responsibility which presses upon me, as I stand before you this evening, for the first time, in my new official position?

It has happened, that one who for long years has worn, with singular grace, the robes of professional office, and who for more than a quarter of a century has been alike the pride and ornament of this school, has felt that the time has come when, with every propriety, he may retire from the active duties of his chair, and permit himself that relaxation which advancing years and the sense of duty well performed justly entitles him to demand.

Gentlemen, it is not often that a man can so live, preëminent for learning, worth, and purity, as to forestall the judgment of posterity; it is not often in our profession that contemporary tongues roll up the shout of *αναγνωρισθειν*

—king of men; it is not often given to living man to pluck the chaplet of immortality, and wear it on a mortal brow. Yet all these have been graciously granted to one whom we hold dear.

All honor, then, to him of whom I speak, whose honors need no roll call; to him, the wise physician, the illustrious surgeon, whose fame is world-wide, and to whose books learned men in every country turn; to him whom royal lips have told that in honoring him Great Britain's august University had honored itself; to him, so long the standard-bearer of the American profession; to him, the glory of our school; our own beloved and venerated GROSS.

To carry on the surgical teaching of this school, the Honorable Board of Trustees has

*Resolved*, That hereafter, surgical instruction in the Jefferson Medical College shall be given by two professors, *namely*, a Professor of the Principles of Surgery and Clinical Surgery; and a Professor of the Practice of Surgery and Clinical Surgery.

To the former chair, the Board of Trustees elected Dr. S. W. Gross, and to the latter, myself.

In choosing a subject for our consideration this evening, it seems to me that I cannot do better than to invite your attention for a few moments to the study of some of those phases through which surgery has passed before reaching its present high position. Its origin was most venerable, and its beginnings are hidden

by the mists of ages which overhang the early history of the Asiatic nations, the Egyptians, and the Greeks. It would seem that, at first, it was closely allied to priestly functions, and that its exercises were limited to the ministers of religion, who attended equally to internal and external maladies, and, in fact, were physicians as well as surgeons. In these early days the world was wild, and human resources were comparatively few. Men lived by rapine of some sort, and nations rose by violence, only to fall before a greater force. It was all fierce struggle, and the great men were the great conquerors, and thus it happened that those whose life was strife, sought to attach to themselves such as might cure their diseases, and heal their injuries. Hence it came about that the physician, and in this term the surgeon is included, soon became a man of mark, whose services were eagerly sought after, and sometimes highly rewarded. He was cared for too, for his services were not easily replaced. Thus Homer, in the eleventh book of his Iliad, tells us how Machaon, the physician, was wounded in the shoulder by a dart from the hand of Paris, and makes Idomeneus thus cry out to Nestor :—

“O Nestor, son of Neleus, pride of Greece,  
Haste thee to mount thy car, and with thee take  
Machaon; tow’rd the vessels urge with speed  
The flying steeds; worth many a life is his,  
The skillful leech, who knows with practic’d hand  
T’ extract the shaft, and healing drugs apply.”

He also gives us the names of other Greek warrior-surgeons, Podalirius and Chiron the centaur, who was translated to the gods. In those days the surgeon was no non-combatant. Machaon, we have seen, was wounded, and Xenophon tells us, in honest prose, how at the battle of Cunaxa (b. c. 400), the Greek surgeon Ctesias was present when Cyrus was engaged in hand-to-hand fight with his brother Artaxerxes, and how Cyrus was stricken by a javelin below the eye, and fell and was decapitated, and how Artaxerxes was wounded in the breast, through his corselet, by Cyrus, and how he, Ctesias, saw all this, for he was beside him, and how he healed the wound. According to Xenophon, the surgeons in the Persian service lived near the royal tents, in the

rather doubtful company of the soothsayers, and flute players.

Hippocrates, the Great Master of Medicine, flourished about 450 years before Christ; his works were chiefly medical, or rather his medical observations far surpass, in excellence, the six chapters devoted to surgical topics. Then, about the time of Christ, Celsus lived, who has given, in classical Latin, an account of the surgery and medicine of his time. Galen, A.D., 165, practiced as a physician and surgeon in Rome, and had a drug shop in the Via Sacra, which was burned up. He made many dissections of animals, and had not a little knowledge of anatomy. He consolidated the doctrines of medicine, and established a system, which lasted for many centuries. After Galen, came Oribasius (A.D. 326-403), Alexander of Tralles (A.D. 525-605) and Paulus *Ægineta* (A.D. 660). Then succeeded the Arabian physicians, with their religious horror of shedding blood, preceding the veritable dark ages of surgery, which followed the assembling of the Council of Tours, A.D., 1163. Up to this time the practice of medicine and surgery in Christian Europe had been in the hands of the Clergy and the Jews, and whatever knowledge of both then existed, had been in great part kept alive, dormant it is true, but yet alive, in the seclusion of the monastic establishments. But by the action of this Council the clergy were, Shylock-like, forbidden to perform any operation involving the shedding of blood. It thus came about, that from this time, for centuries on, surgery was divorced from medicine. The practice of the latter remained with the clergy, that of the former fell into the hands of the Hebrews and the laity. The laity were ignorant and credulous, while the Hebrews were prevented, by the superstitions of the time, from practicing their skill to any great extent among Christians. Their traditions, however, remained with them, and I am sure you will all remember how skillfully Rebecca treated Ivanhoe, after his mishap in the lists of Ashby-de-la-Zouche, how the wound made by the lance head which pierced his breastplate was cured in eight days, and how narrowly poor Rebecca escaped the consequences of her kind action. How I wish that the Wizard of the North had

found out the ingredients of old Miriam's balsam, or that the healing secret of the beautiful daughter of Isaac of York had come down to us. In all seriousness, I think we can look upon the charming picture which Scott has painted as, in a measure, typical of the customs of that day, for if credence can be given to ancient chronicles, and to the traditions they embody, it would seem that some kind of surgical skill was professed, if not possessed, by the ladies of the turbulent and oft-times cruel warriors of the so-called gentle days of chivalry. It is, after all, only natural that it should have been so, for the true home of pity is the gentle heart of woman; woman, who always, and in every clime, has shown herself ready to care for the helpless, the injured, and the brave, were she Queen Philippa, or the Sister of Charity, or Sister Dorothy, or the gentle lady who may tend the fallen beneath the red cross of a Humane Commission.

The history of nations, as it comes to us, is, in a great part, the story of only a few individuals. As Thackeray has put it, in his ringing Chronicle of a Drum, the bearskin cap of the grenadier towers above all the people, and shuts out from the observer's eyes almost everything save the soldier's grandeur. Somewhat in the same way, though in a better and far nobler sense, the history of our art, in the sixteenth and seventeenth, and perhaps in the eighteenth century also, resolves itself into the consideration of the lives and actions and discoveries of a very few, those who rescued surgery from the charlatans and ignorant, and who breathed fresh life into the torpid figure which had so long lain soulless, beneath the chill coverings of ignorance and superstition, and who made surgery that noble science of which, thank God, we now may well be proud.

At the very beginning of the sixteenth century all was dark, but two men were soon to be born whose labors and observations were to shed great light over the world of medicine. One of these was Andreas Vesalius, the other was Ambrose Paré. Vesalius was the son of a Brussels apothecary, and was born about the year 1513. He studied medicine, such as it was in those days, at Montpellier and Paris; then served, probably as a surgeon, in the

Spanish army, and about 1538 became Professor of Anatomy, at Pavia. In 1544 he was made surgeon to the Emperor Charles V, and afterward to Philip II, at Madrid. Here he fell into trouble, as some assert, with the Inquisition, or, as others say, and among them Paré, on account of his too great haste in making a so-called post-mortem examination on a woman who was not really dead. He, therefore, left Spain, for the purpose of making an expiatory pilgrimage, and in returning he was wrecked on the island of Zante, where he is supposed to have died from hunger and exposure about 1564. Paré speaks of him as one "who in our time first gave life to anatomical information, that was almost decaied and neglected." His life was a chequered one, marked by adventure, great triumphs, and much suffering. You all know the engraving of Vesalius standing at his dissecting table, his eyes upon the hanging crucifix, seeming to look into futurity. Little did it, in the end, matter to him, that how he died is untold, and that his burial place, if he had any, is unknown, for in his life he had done enough to make an immortal name. He had founded a new knowledge; anatomy as it came into his hands was a jumble of ignorance and absurdity. He began anew, he wrought out the truth with his scalpel, and in 1543 he published his magnificent treatise on Anatomy, which he left, almost a finished science, with comparatively little for other hands to do.

Ambrose Paré was contemporary with Vesalius. He was born at Laval, between 1510 and 1517, and died in 1590, thus surviving Vesalius 26 years. Like the latter, he also was a Reformer. Indeed, he did so much for surgery that he may be said to have fairly earned his title of "Father of Modern Surgery." He was originally a barber, in the old acceptance of the term, and he afterward became a member of the Surgical Society of St. Côme, and was greatly distinguished as a military surgeon. He served five French Kings, and was a trusted servant of the Crown; and was protected when other Huguenots fared ill at Court. His great work on surgery appeared in 1545. In the first three editions he speaks of himself as a "Master Barber Surgeon," in the subsequent ones as the "Surgeon

of the King." The improvements which he introduced into surgery were many, but the chief of these, those which mark the advance of surgery in the sixteenth century, were the invention, re-introduction, as some say, of the ligature for bleeding vessels, and the employment of emollient dressings in lieu of the barbaric cauteries previously in use. The dread inspired by these cruel burning applications must have been very great. Gale, who wrote in 1563, in England, says the heated irons "sore feared the people with the orror of cauterization, or burning, as we call it, that many of them would rather dye with the member on, than to abide the terrible fire, by means whereof many people perished." Paré has also given us many valuable and original observations on the use of the ligature for aneurism; on tracheotomy, "opening the weazon," as he styles it; on injuries of the head; on gunshot wounds; on the filet in ligature, an anticipation of the tourniquet; on the union of tendons; on fistula, and very many other matters. You will thus see how it was that the surgery of this sixteenth century advanced; that it became humane, at all events, at the hands of Paré himself. These changes for the better were brought about first by the progress in anatomy made by Vesalius and his successors, especially Fallopius and Eustachius, and secondly, by Paré's own great discoveries, not only in the practice, but also in the principles of surgery. And here let me say that the use of the ligature and the emollient dressing of wounds met with the then usual fate of discoveries. They were looked at, wondered at, and partially tolerated when practiced by the great surgeon himself, but after his death they were decried, so that it was not until after the lapse of two centuries that they came into general use.

Let us now turn to the seventeenth century. Paré has long been laid to rest; the golden period of French surgery has passed, and again, after many years, another great man, one, too, of the immortals, comes before us. The scene is England, and the majestic form of William Harvey glides upon the stage (1578-1657). I need not now describe him or his deeds; think only of the picture to be seen in every print-shop—Harvey demonstrating his discovery of

the circulation of the blood to King Charles the First. In 1615 Harvey was chosen to deliver the Lumleian lectures on anatomy and physiology in the College of Physicians, and thus early he promulgated his original views on the circulation of the blood. In 1628 he published his "Exercitationes de Motu cordis et sanguinis." At first his discovery was opposed, but he was fortunate enough to live to see it triumph. It is no part of my plan to enter into any discussion concerning Harvey's discovery or its undoubted originality. This has already been most exhaustively done by your Professor of the Practice of Medicine, on an occasion similar to the present, five years ago. Let me quote his conclusions: "Of the extraordinary value of the discovery of the circulation of the blood, there can be no question. There have been discoveries in medicine which have more immediately benefited the human race. Vaccination was one; the introduction of anæsthesia another. But there has been no discovery of which both the immediate and the remote consequence have been more striking. Without it there would be no such thing as scientific medicine; the medicine of to-day would be an impossibility. \* \* \* And there are discoveries rendered possible, and consequences to come, which no eye that cannot penetrate the future can foresee." The discovery of Harvey was the one great feature of medical progress during the seventeenth century, but there was other work done by men of lesser note. Thus the lacteals were described by Gaspard Aselli, in 1622, and more fully by Pecquet, in 1647. In Germany, Fabricius Hildanus, and Scultetus wrote books on surgery. Ruysch, too, in Holland, was Professor of Anatomy toward the close of the century; he discovered a method of making wonderfully fine anatomical injections. His secret died with him, and his collection was published by Peter the Great, for 30,000 florins.

In England, Richard Wiseman, who has been styled the father of English surgery, published a folio in 1676, which he dedicated to King Charles the Second. From the title page it would appear that Wiseman was "Sergeant Chirurgeon" to his Sovereign, the office which is now held by Sir James Paget. He

was a man in good repute, and on friendly terms with the leading London physicians, Sir Francis Prujean, Sir Charles Scarburgh, the attendant successively of Charles the Second, James the Second, and William the Third, Dr. Thomas Coxe and others, which is saying not a little for a barber-chirurgeon of that day. These men liked him, and sent him patients, and his book furnishes some very quaint descriptions of the consultations between the physicians and surgeons of the time. There is much sound reading in Wiseman's eight surgical treatises or chapters. He gives us the histories of many cases, both in civil and military practice, for when the Royal standard was raised, our author took the field, following the fortunes, or rather the misfortunes of his kingly patron. His book affords us a good notion of the state of surgery during the civil strife. It is evident that the author understood the general principles of the treatment of fractures; he employed and counseled the reduction of dislocations by manipulation, by "circum-rotation," to use his own term, in much the same manner as is now done. He had a mortal horror and contempt for "bone-setters," for, as he states, "these people say that every bone is out of place which they are called to look upon, and so by their rash extensions they do frequently cause sad accidents. But their more gainful way is by extending and dressing up joints, rather wrencht than dislocated. In which if they escape undetected they must need reap great credit, the patient recovering so soon the use and ease of them, whereas, if the joint happen really to be luxated, scarce one of them knoweth how to reduce them;" and in this I fancy Wiseman held sound opinions.

You will naturally ask if Wiseman practiced the ligation of arteries. Yes, he did; he was aware of Paré's methods, and used the ligature, sometimes for amputations, sometimes to restrain the bleeding of wounds, and he gives an account of ligation of the brachial for this cause. For all that, he had a strong leaning toward the actual cautery, which he oddly enough considered more convenient for field surgery than the ligature; and then he thought very highly of a certain royal styptic, which he believed could supplant the ligature. In fact,

royal styptics were much in favor for two centuries, but when fairly tested they usually ended as royal failures. Wiseman was undoubtedly a shrewd and observing man, yet he too was hide-bound in many of his beliefs. It was the fashion of his age. Thus, in his chapter on scrofula, the King's Evil, as it was called, he first carefully impresses the young chirurgeon with the obstinacy of the affection, and its incurability by ordinary measures. He then adds, "But when, upon trial, he shall find the contumaciousness of the diseases, which frequently deludes his best care and industry, he will find reason of acknowledging the goodness of God who hath dealt so bountifully with this nation, in giving the Kings of it, at least from Edward, the Confessor, downward (if not for a longer time), an extraordinary power in the miraculous cure thereof." And then he explains that this cure is by the touch of the King, and that the royal gift of a piece of gold or silver does not affect the potency of the touch; and that the healing touch was vested in the English crown, and he doubted if the King of France had this prerogative, as the French asserted; and strangest of all, he tells that he himself had seen many hundreds of cases cured by his English Majesty's touch alone, without the assistance of chirurgery, and that many of these had tired out the endeavors of able surgeons before they came to the King. He tells us also what wonderful cures were effected by the blood of King Charles the First, gathered on chips and handkerchiefs at the time of his execution.

Wiseman, during the civil war had an apprentice, a servant, as he calls him, a certain Will Clarke. Will accompanied his master to the wars, and at the bloody fight of Worcester the two were busy in the town, dressing, among others, a case of severe sword wound of the head; but, as our author candidly tells, "the alarm growing hot, of the enemy's entering the city, I left Will Clarke to bind it up, and made my way out of the city." It is pleasant to know that no harm came to Will, thus deserted, but that the Parliamentarians, finding him so usefully employed, gave him the liberty of the town, and suffered him to go on dressing wounds.

I strongly suspect that the Father of English

Surgery was not personally over-brave. He was not, in the language of the time, a man of blood, for at the fight of Truro, a poor, wounded trooper, with his skull cap laid open, stopped our hero by force and insisted on being dressed. Hear what our surgeon did: "I hastily lifted up the bloody hair, and saw a quantity of the brain lie among it. I took it up with my fingers and showed it to him, the sight whereof so calmed his passion that I had liberty to fly from the enemy, who was entered the town." And on another occasion, at Weymouth, he amputated the arm of an Irishman, and afterwards the fort was taken, so our surgeon slipped down the face of the work, and into the ditch, and out of the trench, when he heard a voice behind him, calling out, "Chirurgeon, Chirurgeon," and as he looked back he saw a man with a "stumped arm." It was the Irishman. So, for pity's sake, he turned back and helped this one out of the ditch; and he adds, "we ran away together, but he outran me quite." The Irishman, I am glad to say, recovered. And this is a true account. Perhaps history nowadays is not written so frankly, so truthfully, or maybe mankind are braver. Yet, in justice to our own craft, let me add, that if Wiseman did run away on convenient opportunity, Will Clark never did. His record, as presented by his master, shows always the same constancy and devotion to his duty and his profession. He afterward settled at Bridgeport, in Shropshire, and appears to have prospered. He certainly deserved his success.

Let us now see how surgery fared in the eighteenth century. I must recall to your mind that the death of Paré, in 1590, was followed by a retrogression or decadence in French Surgery. His contemporaries had always been inimical and had repudiated his teachings and denied his discoveries. Even his pupils were false to his memory, and for a while the great legacy bequeathed by Paré seemed in danger of being lost forever. The ligature was forsaken, and the French surgeon, for another hundred years, complacently grasped his cauteries as though Paré had never been born. But in the beginning of the eighteenth century a change for the better took

place, and this was chiefly brought about by the establishment of the famous French Royal Academy of Surgery, in 1731, of which the illustrious Jean Louis Petit (1674-1750) was the chief founder. A surgeon named Littré had lived in his father's house, and from him the boy Petit learned to make anatomical preparations. He studied medicine, entered the army, saw service in historic Flanders, and afterward settled in Paris, where he began practice and teaching. In 1705 he published his famous book on diseases of the bones, chiefly fractures and luxations, of which Bœrhaave said, that nothing like it had ever appeared, and which was the authority on that subject for half a century. The effect of this work was to take the treatment of these injuries from the bone-setters, and to bring them within the pale of legitimate surgery. Petit acquired great reputation; he invented the screw tourniquet, devised bilateral lithotomy, and made some improvements in the operation for hernia. His great work on surgical diseases did not appear until after his death, although he wrote constantly in the publications of the French Academy. In the foundation of this institution he was greatly assisted by Maréchal and La Peyronie, body surgeons to Louis XIV and XV. The number of members at first was limited to seventy, and embraced, as the Academy grew in age, many illustrious names; among those who wrote for the published memoirs may be mentioned Petit, On Injuries of the Head; Quesnay, on Trepanation; Louis, on Amputations and Tracheotomy; Bouche, On Joint Injuries; Verdier, on Rupture of the Bladder; Lafitte, on Nephrotomy; Lafaye, on Exarticulation of the Humerus; La Martinière, on Shot-wounds and Trepanation of the Sternum; David, on Emphysema; Bordenave and Jourdain, on Diseases of the Antrum; Sabatier, on Fracture of the Neck of the Femur; Brasdor, on Fracture of the Clavicle and Joint Amputations; Moreau, on Luxations of the Femur, and Morand, on Paracentesis of the Chest, and many others, including Desault, Ravaton and Chopart. You will, I am sure, be surprised at this list of authors and subjects, but you will understand why the Academy reigned supreme in the surgical domain of Europe for fifty years, until,

indeed, its suppression in 1793, at the beginning of the French Revolution.

The happy influence of the Academy was exerted in many ways by its publications. It served to train up a race of enterprising and cultivated surgeons. It made Paris, for the time being, the centre of surgical education, and it attracted thither strangers from every country. It greatly improved the course of medical instruction, it fostered the study of special subjects, it substituted observation of facts in the place of a blind deference to the writings of the ancients, and it developed that taste for surgical anatomy which afterwards bore fruit, in the researches of Lisfranc and others, at the beginning of the present century. The strength of the Academy depended, however, on a few men, and as these aged its influence lessened. Especially was this the case when the great John Hunter came actively upon the scene. One effect of the Academy was to keep surgery separated from medicine, and it was not until after its suppression that these two great branches of medicine came together. As some one has said, with the Republic they became one and indivisible. May they ever so remain; for, rest assured, gentlemen, that no man can be a good surgeon who is not also a good physician; and I much doubt whether any one can be a good physician who does not possess, at all events, to a reasonable extent, some surgical knowledge. So closely interlaced are the phenomena of internal and external disease, and so arbitrary is their dividing line, that it is at times hard to say where medicine ends and surgery begins, or the converse.

Another renowned French surgeon was Desault, who was born in 1744, and died in 1795. He was intended by his parents for the priesthood, but he rebelled against home influence and studied medicine. His first passion was for anatomy, in which he made great proficiency, and at the age of twenty-two he opened a private anatomical theatre in Paris, and gained much reputation by the clearness and precision of his demonstrations. He may be looked upon as having established, in France, the teaching of surgical anatomy. He paid great attention to the details of operative surgery, and he revived, in France, the disused

ligature. He simplified amputations, and systematized the treatment of fractures, and the application of bandages and splints. I dare say that many of you have a lively recollection of the perplexity of his dressing for fractured clavicle, and I am quite sure that some of us, your seniors, have looked unkindly on his thigh splint, with its distracting splint cloth. Desault was a great clinical surgeon, and his amphitheatre was crowded by students of every nation. As a worker, he was indefatigable, but he cared little for disputations. With the revolution he had no sympathy; he was engrossed in his profession, and he kept at his post in discharge of his hospital duties until he was arrested by a decree of the Committee of Safety, and sent to prison. At the expiration of three days, and on the clamorous solicitation of his patients and pupils, he was released. In 1794 he was appointed, by the revolutionary authorities, Professor in the newly founded "École de Santé." At that time he was in greatly depressed spirits, the result of the troublous times, the loss of many of his friends, in exile or on the scaffold, and the anticipation of still further annoyance by the authorities. In May, 1795, he fell into a low fever, and although skillfully and affectionately treated by Chopart and Corvisart, he died, early in June. His death is announced in a flaming notice of the *Moniteur* of June 4th. On the authority of Fischer, from whom I have taken the above facts, Desault's death was popularly attributed to poison, as he died some days after the execution of Louis XVI, whom he had attended in the Temple prison, and also because of his steadfast behavior in opposition to the merciless designs upon the life of the little Dauphin.

There is yet one other name which must never be forgotten, that of Xavier Bichat, who was born in 1771. Trained in the school of Desault, and a member of his family by adoption, Bichat, though he died in his thirty-first year, had lived long enough to found the science of general anatomy, and by his range of thought and wonderful power of observation, to leave behind him a name second to none in the annals of science, unless it be to that of the great master of all, John Hunter.

To this century also belongs August Gottlob Richter, of Saxony (born 1742, died 1812), who was for forty years Professor of Surgery at Gottingen, and who ruled with royal sway over the wide domain of German surgery. He may, I think, be regarded as having raised the surgery of his native land from its previously low condition to the level of that of his English and French contemporaries. He was distinguished as a teacher and hospital surgeon, and has left behind a valuable mass of surgical observations. The illustrious Albert Von Haller was also one who exercised a mighty influence on the profession of his day. He was born in Bern, in Switzerland, in 1708. In 1756 he became Professor at Gottingen, a position which he held for seventeen years, and during all this time, although he taught anatomy and operations on the dead body, he never could bring himself to perform an operation on the living person, for fear, as he candidly says, "lest he should hurt them." In 1757 he published, in eight volumes, his wonderful elements of the physiology of the human body, which has been a delight to the learned of the profession from that day to the present.

One other surgeon of this time to whom a debt of gratitude is due was the Italian, Scarpa. He was born in 1747, and became Professor of Anatomy at Modena in 1772, and at Pavia in 1783. He was made surgeon to Napoleon, as King of Italy, in 1805. His chief writings were on surgical anatomy, hernia, diseases of the eye, and aneurism.

Yet another eminent surgeon of this epoch was Lorenz Heister, born at Frankfort on Main, in 1683. As a young man he saw much of military life, and after the fierce fight at Malplaquet, in 1709, he had charge of many wounded. In 1719 he published his work on surgery, which was continued as an official text book at the University of Vienna until the year 1838, nearly 120 years. Heister was a fearless man, of outspoken truth, and published alike his successful and unsuccessful cases.

Did time and the limits of this sketch permit, I might add many names to the list of Continental surgeons, whose works did honor

to their profession ; but I must pass on. The Eighteenth century was a marked period in the history of English surgery. It was its transition age. Up to this time its character had not differed greatly from that of the surgery of the rest of Europe. It probably was somewhat more simple, but still it was essentially empirical, and its true development into a School of Scientific Surgery did not set in until the advent of John Hunter. Yet influences were gradually at work, tending to bring about a better state of affairs in surgery than had heretofore existed. Chief among these was the development of the London Hospitals. In the early part of this century several new hospitals were established, which served as fit schools for the education and training of those men who were soon to make the name of English surgery famous. Senior among these was William Cheselden (1688-1752), anatomist and surgeon. He was surgeon to St. Thomas' Hospital, consulting surgeon to St. George's, and to the Westminster Infirmary, and, later in life, surgeon to Chelsea Hospital. He was distinguished in every branch of his profession, but especially as a lithotomist. So great was his reputation that many foreigners were attracted to his hospital to see him cut for stone, and to learn his method.

Another prominent and skilful surgeon was Percival Pott (1713-1788), who studied at St. Bartholomew's, and afterwards became one of its surgeons. When he began the practice of his profession surgery was in a defective state. The instruments were multitudinous, clumsy and inefficient, operations were performed in a bungling manner, and their after-treatment was confused, tedious and distressing to the patient. The actual cautery and charcoal pan were in every day use in the hospital, and the iron was always heated for the daily visit of the surgeon, as a matter of course. Pott was a man of sound judgment, and against all these evils he set his face. He directed his efforts to study the powers of nature and the healing process. He threw away many instruments, improved others, and simplified dressings and fracture appliances in a remarkable degree. He laid aside the cautery and resorted to the ligature, and contributed greatly

to the introduction of the latter into England. His constant aim was to cure his patients as speedily, thoroughly and painlessly as possible. It has been said of him that he was, for his time, the best practical surgeon, the best teacher, the best writer, and the best operator in London. He wrote much, and his works are characterized by their practical value. His life was one of beneficence, and his last words were noble and characteristic: "My lamp is almost extinguished; I hope it has burned for the benefit of others."

Scotland, too, in the eighteenth century, furnished her quota of distinguished surgeons. First, the three Monros, the first of whom was largely instrumental in founding the Medical School of Edinburgh, and all alike were professors of anatomy. Secondly, the two Burns, Allan and John, of Glasgow, both of whom did fair work in anatomy and surgery. Thirdly, the Bells, Benjamin, John and Sir Charles, the latter of whom survived until 1842, and who, besides his writings on surgery and anatomy, was so fortunate as to discover the differing functions of the anterior and posterior columns of the spinal cords, and the respective roots of the spinal nerves. This discovery may be regarded as second only to that of Harvey. Then came the two Hunters, William, and John, the greatest medical mind the world has ever produced, and the unquestioned founder of scientific surgery. The story of his life work has been the theme of many pens, and his biographers unite in reverence of his name. Among the latest and most critical narrations of his life I may mention the Hunterian Oration before the Royal College of Surgeons in London, in 1877, by Sir James Paget, a faultless production; and the exhaustive address upon John Hunter and his Pupils, delivered before the Academy of Surgery of this city, in 1881, by its first President, our own Professor Gross. No one is more competent than he to sum up the character of Hunter. He says: "With the exception of Hippocrates, the Father of Medicine, John Hunter is the grandest figure in the history of our profession. \*\*\* He was not only a great surgeon, a wise physician and a great anatomist and physiologist, but, above all, he was a philosopher, whose

mental grasp embraced the whole range of nature's works, from the most humble structure to the most complex, and the most lofty." And again, \*\*\* "Hunter is peerless in the history of British surgery, and after the lapse of nearly a century the profession turns to his memory with increased reverence for his transcendent genius, his matchless ability, and his unequalled services. To say that he was simply the Father of Scientific Surgery would fall far short of his deserts; to do him full justice we must add that he was the father also of scientific zoölogy and of comparative physiology." Apart from his general scientific work, it is impossible to overrate the services rendered to surgery by John Hunter. He shone alike as physiologist and pathologist, anatomist and surgeon; and his practical contributions were the legitimate outcome of his scientific thoughts and researches. I will not here venture even an abstract of his life. The history of so great a genius demands more than a passing sketch, and I must, therefore, refer you to the sources indicated, if you would seek to learn something of the early struggles of the man, the obstacles he overcame, and how he worked, and what he accomplished.

I have thus, gentlemen, endeavored briefly to trace with you the outline of the rise of surgery. We have fancied its origin in prehistoric times, and have marked its progress as an integral part of medicine throughout the Greek and Roman eras. Shorn of its high estate in the twelfth century, we have seen it, for full four hundred years, struggling in the hated embrace of the rude and unlettered. Then, in the sixteenth century, the learning of Vesalius, and the teachings of Paré have heralded the rescue and the freedom of our art. The seventeenth century is marked by the discovery of Harvey, and of all that it made possible. In the beginning of the eighteenth century we discern renewed and widespread surgical activity. Everywhere in Europe workers are busy; the happy influence of the French Academy radiates in all directions. In London, hospitals spring up, and the great race of British clinical teachers take their being. The school of experience is thus developed, soon to be merged in the everlasting school of scientific surgery, John Hunter's greatest legacy.

And now, nearly another hundred years are sped, and the nineteenth century is growing old. The scroll of its years is well nigh rolled out ; what does the record show to chronicle the onward march of surgery? Is there aught new and lasting, to render its annals memorable? I think there is. Looked upon from a medical standpoint, this century has been one of investigation. The study of the special branches has been its characteristic, and on all sides willing laborers, like diggers in some great mine, have sought, each in his own proper drift, to unearth fresh precious ore, in contribution to the common output. In every department surgery has moved on, and particularly in the direction of surgical pathology, the invention of new and fresh means of exploration, as the ophthalmoscope, the laryngoscope, the endoscope, and others of like nature ; the application of electro-therapeutics, the employment of pressure in the treatment of aneurism, the adoption of fixed dressings, and generally the simplification of all fracture apparatus. The reduction of luxations, has been systematized, and ingenious machines for the exhibition of force have been devised. Orthopedic surgery in all its branches, and tenotomy, have been diligently cultivated ; and the intelligent assistance of the artisan has been made available in effecting the cure of deformities. Plastic surgery has worked wonders, and the triumphs of conservative surgery have been great. By judicious resections limbs are constantly saved which otherwise would be lost ; amputations too have been largely modified and rendered less dangerous. Great advances have been made in military surgery, in the transport of wounded, in the organization of field hospitals, and in military hygiene generally. The status of the wounded has been bettered, and a humane system of ethics established, based upon the demands of Christian nations, so that the red cross is now found on every battle field. It is not too much to say that many of these softening influences, these silver linings to the cloud, may be traced to our late war.

In urinary surgery much has been accomplished during the present century. The original process of Civiale for crushing stone,

has been followed by the construction of more perfect apparatus and a more efficient application. Our own countrymen have contributed not a little in this direction, and I can but think that the meatotomy, devised by Otis, carries with it far more than was at first supposed. It has led to improved methods of treating stricture, and it underlies and renders possible Bigelow's brilliant operation of litholapaxy, which has taken the surgical world by storm. It is not impossible that future advances in vesical surgery may date from this little operation. Then, too, think of the changes for the better in wound dressings, and of the importance which is now attached to the simple matter of drainage. There is no doubt that this question of drainage is much more important than was formerly imagined, and it may be that the enthusiasm over union by the first intention has been carried somewhat far. Be that as it may, it now seems certain that free drainage is the best preventive of septic poisoning. Great advances have also been made in the special branches of surgery. Observe the outlook of ophthalmology and the improvements in aural surgery. Think what gynaecology is, and what it has accomplished ; of the great tumors from which it frees the woman, and of its marvelous restorative powers. And there are those extraordinary operations of the day, the removal of the larynx, of the kidney, and of portions of the stomach, and others of like nature, the propriety and value of which have yet to be determined. Then we have Listerism in its varied forms, and the bloodless surgery which Esmarch has given us. In truth, it would almost seem that had the German surgeon walked the Rialto in old Shylock's time, that pound of Christian flesh might have been gotten without such jeopardy to life and monies.

But I will stop here ; I might easily occupy your time to weariness, if, indeed, I have not already done so, by raking over the lumber-room of this century, and by showing you how many and how vast have been the betterments of surgery. Some of these have been but temporary, and have given place to others, which seem now to be permanent, or, at least,

have already done great good. Yes, the surgery of the nineteenth century has progressed, and markedly so, during the last fifty years. The God-given boon of Anæsthesia has done more for our profession, more for mankind, than any single invention or discovery ever did before. Ere anæsthesia was, the Demon of Pain, with her attendant devils, had, ever since the world began, stretched out her black wings over the earth and reigned supreme. Pain was inevitable and inexorable. Pain was the foe of the surgeon, the bitter, ever present foe, sparing neither sex nor age. If a bone was broken or out of place, pain hindered the reduction, pain made the muscles rebellious and obstinate, pain gloried in confusing the surgeon's diagnosis. If a hernia was strangulated, pain made the tissues obdurate and the stricture unyielding. Pain resisted taxis and opium, and the hot bath, and tobacco. If an operation was to be performed, if a tumor was to be removed, or a stone taken out of the bladder, pain made it all intolerable, pain shocked the patient, pain often made him die. Think, gentlemen, what an amputation was, and that not long ago. The surgeon had as much manual skill then as now; he had the same knife and saw; he had his tourniquet and ligature. His patient is on the table; what is it but a torture table? Fancy the sufferer's state of dread and mental anguish before the operation begins, and the agonizing pain during the operation, and the syncope when overtaxed nature can bear no more, and the after shock, and all its dangers. You can see the surgeon, in his laudable efforts at haste, operating by the watch, and you understand the difficulties of the ligations, and the increased chances of secondary bleeding, and the whole chapter of evils which I need not relate. It was a most horrid business.

But, now, it is all changed. Things are

quite different for the surgeon. He is very strong in his new powers, for is he not more potent to do good than were he clad in Prospero's robe, or armed with Merlin's wand? Can he not, with his wondrous ether, induce a sleep, sounder than ever Juliet slept? Can he not, then, work his art, and his unconscious patient slumber on, to wake but with the memory of a happy dream? Or, if he wills it, may he not, with his charmed needle, safely instill into the sick man's veins the subtle compound, more potent to give balmy rest

"Than poppy, or mandragora, or all the drowsy syrups of the world?"

Surely, surely, surgery has had its triumphs, since our century was young, for it has achieved anæsthesia, hypodermic medication, Esmarchism. Only think what anæsthesia means; that it implies the power to dull maternal throes, to still the agony of injury, of operation, and often of disease; to bid the sufferer sleep; in short, to banish pain. Has mankind ever yet received so great a gift? Can the power of any conqueror, be he ever so mighty, or of any legislator, be he ever so wise, confer upon our race such blessings as anæsthesia brings? You, gentlemen, are entering upon your studies at an auspicious period. Much has already been accomplished, and of that you reap the benefit. Yet much, much remains to be done by you and by those who, like you, are the students of to-day. You will be the workers, and many of you, I trust, the teachers of the future. It behooves you, then, to prepare yourselves diligently and thoughtfully for the parts you have yet to play. We, your preceptors, are prepared to help you in every way we can, in your laudable efforts, and may Almighty God bless our endeavors to make you prudent and wise physicians, honest to your own consciences, and faithful to those communities in whose midst you shall hereafter stand!!





